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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,081	05/22/2001	Ramin Farjad-Rad	2789.2016-000	9019
21005	7590	10/20/2004	EXAMINER: LE, AMANDA T	
HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			ART UNIT 2634	PAPER NUMBER

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**Application No. **6**

09/863,081

Applicant(s)

FARJAD-RAD, RAMIN

Examiner

Amanda T Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 May 2001.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-18 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 22 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/22/01.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (5,907,295) in view of Khoury (US 5,931,898).

Lin discloses an up sampling converter (Fig. 5A) comprising the following claimed limitations:

In claims 1, 9, 11-13, 15, “a receiver equalizer, comprising samplers for sampling an incoming input data stream according to plural phases of a sampling clock, each sampler producing a data sample” (30) “a multi-tap finite impulse response (FIR) filter for each data sample, weights said data sample and at least one previous data sample, and combines said weighted data samples to produce an equalized data bit” (44).

Lin fails to teach that the operations performed by the claimed FIR are in analog domain.

Khoury discloses a FIR wherein the operation of “weighting” and “combining” are done in analog domain (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lin’s circuit using Khoury’s teachings to have the weighting and combining operations performed using analog circuits. Such modification is necessary when the specification of a particular system calls for analog components.

With respect to claims 2, 16-18, Lin and Khoury, taken collectively, disclose all the subject matters claimed, as described above. Khoury (col. 4, line 45-col. 5, line 4) further

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teaches “a first current source that produces a first current which is proportional to a product” (Fig. 2, element 18), “a second current source that produces a second current which is proportional to an instance data sample” (Fig. 2, INP, 34A), “an adder circuit which subtracts the second current source the first current to produce a third current” (Fig. 1, 19A, 19B). With respect to “a converter circuit which converts the third current to a voltage corresponding to the equalized data bit”, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a current-to-voltage converter, which is widely available in the industry, to convert the equalized data bit from current to voltage in view of Khoury’s teachings on col. 8, lines 15-21.

With respect to claims 3-8, Lin and Khoury, taken collectively, disclose all the subject matters claimed, as described above. The limitations regarding the characteristics of the equalizer or communication channel recites the intended use of the claimed invention and do not result in a structural difference between the claimed invention and the prior art.

With respect to claims 10 and 14, Lin and Khoury, taken collectively, disclose all the subject matters claimed, as described above. Lin also teaches “second samplers for sampling and holding the equalized data bit values” (Fig. 5B, 36, 38). The claimed limitation regarding “sense amplifiers for converting the sampled equalized data bit values to digital values” would have been an obvious modification, at the time of the invention, to the system achieved using Lin’s and Khoury’s teachings described above. Such analog to digital conversion, using well-known sense amplifiers, is needed when digital data is required at the subsequent stage in the design system.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda T Le whose telephone number is (571) 272-3052. The examiner can normally be reached on 10:30 A.M. through 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AMANDA T. LE  
PRIMARY EXAMINER